

CLAIMS

1. A solid state imaging apparatus comprising
a photoelectric conversion section formed in an imaging area of a silicon substrate,

5 and

an isolation region formed in at least one part of the silicon substrate located around the photoelectric conversion section and made of an isolation material having a thermal expansion coefficient larger than silicon oxide and equal to or smaller than silicon.

2. The solid state imaging apparatus of Claim 1, wherein

10 the isolation region is made of the isolation material with which an isolation trench is filled, said isolation trench being formed in at least one part of the silicon substrate located around the photoelectric conversion section.

3. The solid state imaging apparatus of Claim 2 further comprising an insulating film covering the bottom and sidewalls of the isolation trench.

15 4. The solid state imaging apparatus of Claim 2 further comprising an impurity-doped semiconductor layer formed in a region of the silicon substrate forming the bottom and sidewalls of the isolation trench by doping the region with an impurity.

5. The solid state imaging apparatus of Claim 1, wherein
the isolation material is silicon.

20 6. The solid state imaging apparatus of Claim 5 further comprising a MOS transistor formed in the imaging area,

wherein the silicon layer contains an impurity of the opposite conductivity type to source and drain regions of the MOS transistor.

7. The solid state imaging apparatus of Claim 5, wherein
the silicon layer is made of amorphous silicon, polycrystalline silicon or porous silicon.

8. A method for fabricating a solid state imaging apparatus, said method comprising the

steps of:

forming an isolation trench by etching a region of a silicon substrate;
forming an insulating film to cover the bottom and sidewalls of the isolation trench;
after the formation of the insulating film, filling the isolation trench with a silicon

5 layer; and

implanting an impurity into a predetermined region of the silicon layer.

9. The method of Claim 8 further comprising the step of making the silicon layer porous.

10. The method of Claim 8, wherein

10 the step of making the silicon layer porous includes the steps of:

attaching an electrode to part of the silicon layer; and

immersing, in a solution, part of the silicon layer excluding the part thereof to which the electrode is attached and then passing current via the electrode through the silicon layer.

15 11. A camera comprising the solid state imaging apparatus according to any one of Claims 2 through 7.